

108

PROCEEDINGS

OF THE

PHYSICAL SOCIETY OF LONDON.

From December 1912 to August 1913.

VOL. XXV.

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PROCEEDINGS
AT THE
MEETINGS OF THE PHYSICAL SOCIETY
OF LONDON.
SESSION 1912-1913.

October 25th, 1912.

Meeting held at the Imperial College of Science.

Prof. C. H. LEES, F.R.S., Vice-President, in the Chair.

The following Papers were read :—

1. On the Constitution of the Mercury Lines Examined by an Echelon Grating and a Lummer Gehrcke Plate. By Prof. H. NAGAOKA and Mr. T. TAKAMINE.
 2. Note on the Mutual Inductance of Two Coaxial Circular Currents. By Prof. H. NAGAOKA.
 3. The Absorption of Gases in Vacuum Tubes. By Mr. S. E. HILL.
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November 8th, 1912.

Meeting held at the Imperial College of Science.

Prof. A. SCHUSTER, F.R.S., President, in the Chair.

The following Papers were read :—

1. On a Method of Measuring the Thomson Effect. By Mr. H. R. NETTLETON.
2. An Improved Joule Radiometer and its Applications. By Mr. F. W. JORDAN.

3. Note on the Attainment of a Steady State when Heat Diffuses along a Moving Cylinder. By Miss A. SOMERS.

4. On the Thermomagnetic Study of Steel. By Dr. S. W. J. SMITH.

November 22nd, 1912.

Meeting held at the Imperial College of Science.

Prof. C. H. LEES, F.R.S., Vice-President, in the Chair.

The following Papers were read :—

1. On a Column Testing Machine. By Prof. E. G. COKER.

2. The Law of Plastic Flow of a Ductile Material and the Phenomena of Elastic and Plastic Strains. By Mr. C. E. LARARD.

Some Kinematograph Illustrations of the Twisting and Breaking of Large Wrought-Iron and Steel Specimens were also exhibited by Mr. C. E. LARARD.

December 17th, 1912.

The Eighth Annual Exhibition of Physical Apparatus was held at the Imperial College of Science from 3 p.m. to 6 p.m. in the afternoon, and from 7 p.m. to 10 p.m. in the evening.

At both the afternoon and evening meetings a Discourse was given by Mr. S. G. BROWN on "Some Methods of Magnifying Feeble Signalling Currents."

The following firms exhibited apparatus :—

R. & J. Beck (Ltd.), Cambridge Scientific Instrument Co., C. F. Casella & Co. (Ltd.), Harry W. Cox & Co. (Ltd.), Crompton & Co. (Ltd.), J. H. Dallmeyer (Ltd.), Dubilier Electrical Syndicate (Ltd.), Edison Storage Battery Co., Elliott Brothers, Evershed & Vignoles (Ltd.), Foster Instrument Co., A. Gallenkamp & Co. (Ltd.), Gambrell Brothers (Ltd.), F. Harrison Glew, John J. Griffin & Sons (Ltd.), Kelvin & James White (Ltd.), E. Leitz, Marconi Wireless Telegraph Co. (Ltd.), Nalder Bros. & Thompson (Ltd.), R. W. Paul, Townson & Mercer (Ltd.), Westminster Engineering Co. (Ltd.), Weston Electrical Instrument Co., Alexander Wright & Co. (Ltd.), Carl Zeiss (Ltd.).

January 24th, 1913.

Meeting held at the Imperial College of Science.

Prof. C. H. LEES, F.R.S., Vice-President, in the Chair.

The following Papers were read :—

1. On the Resistance of Electrolytes. By Dr. S. W. J. SMITH and Mr. H. MOSS.

2. The Electrical Conductivity and Fluidity of Strong Solutions. By Mr. W. S. TUCKER.

Annual General Meeting.

February 14th, 1913.

Meeting held at the Imperial College of Science.

Prof. A. SCHUSTER, F.R.S., President, in the Chair

The Report of the Council was read by the Secretary.

Since the last Annual General Meeting there have been held 13 ordinary meetings and one informal meeting. All of these were held at the Imperial College of Science.

An unusual feature of the past Session was a joint meeting with the Optical Convention on the morning and evening of June 21st. Eight Papers dealing with optical subjects were read at this meeting, and a Part of the "Proceedings" devoted exclusively to these Papers has been issued.

The Eighth Annual Exhibition of Apparatus by Manufacturers was held on December 17th in the afternoon and evening, the number of Fellows and visitors present being about 550. An experimental discourse on "Some Methods of Magnifying Feeble Signalling Currents" was kindly given by Mr. S. G. Brown. The number of exhibitors was 27.

The number of Ordinary Fellows now on the roll, as distinct from Honorary Fellows, is 440; 17 new Fellows have been elected,

there have been 10 resignations, and 5 Fellows have been struck off the roll for non-payment of subscriptions. The Society has to mourn the loss by death of 7 Fellows—namely, the Earl of Crawford, F.R.S., H. Donaldson, Major-Gen. Festing, A. B. Harding, A. E. Hodgson, J. T. Hurst and Prof. Osborne Reynolds, F.R.S.

The Report was adopted by the meeting.

The Report of the Treasurer and the Balance-Sheet were presented by the Treasurer.

The total income of the Society shows a slight increase over that of 1911. This is mainly due to an increase in the subscriptions and in the sales of publications.

The expenditure for the year has also increased, due to the issue of the special number recording the Papers read at the joint meeting of the Physical Society and Optical Convention.

By comparing the balance brought forward on the 1st January, 1912, £97. 17s. 7d., with the balance carried forward (less two cheques) on the 1st January, 1913—namely, £140. 12s. 2d.—it will be seen that the Society has increased its assets during the year by £42. 14s. 7d. This is a very gratifying result in view of the special expenditure that has been incurred, and I think may be taken as indicating that the finances of the Society are in a very sound condition.

The property account of the Society is practically the same as at the date of the last accounts. The values of our securities have again slightly decreased, but when we consider the great depreciation that has taken place in trustee securities during the last few years, the Society has to congratulate itself that the depreciation of the securities is not more considerable.

The Society has again to thank the Manager of Parr's Bank for kindly valuing the securities at the 31st December, 1912, and supplying the figures which appear in the accounts.

The liabilities on account of the Life Composition Fund have decreased during the year owing to the death of three life Fellows and to no new Fellows having compounded for their subscriptions. As a result of the year the balance available in the General Fund of the Society is practically the same as at the date of last year's accounts.

In my last report I mentioned that the back numbers of the publications of the Society were being re-valued. The work of sorting and getting into order the whole of the back numbers of the "Proceedings" of the Society is now completed, and I have made a valuation of the publications of the Society, which is now returned in the accounts at the revised figure of £240.

The Report of the Treasurer was adopted.

PROPERTY ACCOUNT OF THE PHYSICAL SOCIETY, DECEMBER 31st, 1912.

ASSETS.		LIABILITIES.	
	£ s. d.		£ s. d.
Subscriptions due, Treasurer's estimate...	18 18 0	Two Cheques.....	69 1 10
£533 Furness Ry. Co. 3 per cent. Debenture Stock	389 5 0	Life Compositions.....	2,129 10 0
£1,600 Midland Railway 2½ per cent. Preference Stock	1,016 0 0		
£200 Metropolitan Board of Works 3½ per cent. Consolidated Stock	197 0 0		
£400 Lancaster Corporation 3 per cent. Redeemable Stock	316 0 0		
£254. 2s. 9d. New South Wales 3½ per cent. Inscribed Stock	242 10 0		
£500 London, Brighton & South Coast Railway Ordinary Stock	530 0 0		
£500 Great Eastern Railway 4 per cent. Debenture Stock	505 0 0		
Balance at Bank	209 14 0		
Ditto on deposit.....	400 0 0		
Publications (Treasurer's Estimate).....	240 0 0	Balance General Fund.....	1,865 15 2
	<u>£4,064 7 0</u>		<u>£4,064 7 0</u>

WILLIAM DUDELL, *Honorary Treasurer.*

Audited and found correct,

CHARLES V. DRYSDALE,
HENRY M. ELDER.

LIFE COMPOSITION FUND.

	£	s.	d.
178 Fellows paid £10	1,780	0	0
3 Fellows paid £15	45	0	0
4 Fellows paid £21	84	0	0
7 Fellows paid £31. 10s.	220	10	0
	<hr/>		
	£2,129	10	0

NOTE.—Three Fellows who paid £10 deceased during year 1912.

Audited and found correct,

WILLIAM DUDELL, *Honorary Treasurer.*

CHARLES V. DRYSDALE.
HENRY M. ELDER.

The Election of Officers and Council then took place, the new Council being constituted as follows :—

President.—Prof. A. SCHUSTER, Ph.D., F.R.S.

Vice-Presidents, who have filled the Office of President.—Prof. G. C. FOSTER, D.Sc., LL.D., F.R.S. ; Prof. W. G. ADAMS, M.A., F.R.S. ; Prof. R. B. CLIFTON, M.A., F.R.S. ; Prof. A. W. REINOLD, C.B., M.A., F.R.S. ; Prof. Sir ARTHUR W. RÜCKER, M.A., D.Sc., F.R.S. ; Sir W. DE W. ABNEY, R.E., K.C.B., D.C.L., F.R.S. ; Prin. Sir OLIVER J. LODGE, D.Sc., LL.D., F.R.S. ; Prof. SILVANUS P. THOMPSON, D.Sc., F.R.S. ; R. T. GLAZE BROOK, C.B., D.Sc., F.R.S. ; Prof. J. H. POYNTING, M.A., Sc.D., F.R.S. ; Prof. J. PERRY, D.Sc., F.R.S. ; C. CHREE, Sc.D., LL.D., F.R.S. ; Prof. H. L. CALLENDAR, M.A., LL.D., F.R.S.

Vice-Presidents.—Prof. C. H. LEES, D.Sc., F.R.S. ; Prof. T. MATHER, F.R.S. ; A. RUSSELL, M.A., D.Sc. ; F. E. SMITH.

Secretaries.—W. R. COOPER, M.A. ; S. W. J. SMITH, M.A., D.Sc.

Foreign Secretary.—Prof. S. P. THOMPSON, D.Sc., F.R.S.

Treasurer.—W. DUDDLELL, F.R.S.

Librarian.—S. W. J. SMITH, M.A., D.Sc.

Other Members of Council.—Prof. C. G. BARKLA, D.Sc., F.R.S. ; Prof. P. V. BEVAN, M.A., Sc.D. ; W. H. ECCLES, D.Sc. ; Prof. J. W. NICHOLSON, M.A., D.Sc. ; Major W. A. J. O'MEARA, C.M.G. ; T. C. PORTER, M.A., D.Sc. ; Prof. the Hon. R. J. STRUTT, F.R.S. ; W. E. SUMPNER, D.Sc. ; R. S. WHIPPLE, R. S. WILLOWS, M.A., D.Sc.

A Paper on the Dynamics of Pianoforte Touch was then read by Prof. G. H. BRYAN, Sc.D., F.R.S.

February 28th, 1913.

Meeting held at King's College.

Prof. A. SCHUSTER, F.R.S., President, in the Chair.

The following Papers were read :—

1. On the Interference of Röntgen Radiation. By Prof. C. G. BARKLA and Mr. G. H. MARTYN.
2. On Alternating-current Magnets. By Prof. E. WILSON.

March 14th, 1913.

Meeting held at University College.

Dr. A. RUSSELL, M.A., Vice-President, in the Chair.

The following Papers were read :—

1. Some Oscillograms of Condenser Discharges and a Simple Theory of Coupled Circuits. By Dr. J. A. FLEMING.

2. On the Stretching and Breaking of Sodium and Potassium. By Mr. BEVAN B. BAKER.

3. On the Latent Heat of Evaporation of Steam from Salt Solutions. By Mr. R. G. LUNNON.

4. On Some Flame Spectra. By Dr. E. N. DA C. ANDRADE.

Some Braun Cathode Ray Tubes used as a high-frequency Oscillograph and an Electrostatic Machine for working them were exhibited by Dr. J. A. FLEMING.

Some Spark Photographs at High Pressure were exhibited by Mr. W. B. HAINES.

April 11th, 1913.

Meeting held at the Imperial College of Science.

Prof. C. H. LEES, F.R.S., Vice-President, in the Chair.

The following Papers were read :—

1. On Errors in Magnetic Testing due to Elastic Strain. By Mr. A. CAMPBELL and Mr. H. C. BOOTH.

2. Note on Cathodic Sputtering. By Dr. G. W. C. KAYE.

3. Vibration Galvanometers with Unifilar Torsional Control. By Mr. A. CAMPBELL.

April 25th, 1913.

Meeting held at the Imperial College of Science.

Prof. C. H. LEES, F.R.S., Vice-President, in the Chair.

The following Papers were read :—

1. A Graphical Method of Optical Imagery. By Mr. W. R. BOWER.

2. On the Spectroscopic Resolution of an Arbitrary Function. By Dr. C. V. BURTON.

May 16th, 1913.

Meeting held at the Imperial College of Science.

Prof. C. H. LEES, F.R.S., Vice-President, in the Chair.

The following Papers were read :—

1. Some Experiments to detect β -Rays from Radium A. By Dr. W. MAKOWER and Dr. S. RUSS.
2. On Dust Figures. By Dr. J. ROBINSON.
3. Vibration Galvanometer Design. By Dr. H. F. HAWORTH.

May 30th, 1913.

Meeting held at the Imperial College of Science.

Prof. A. SCHUSTER, F.R.S., President, in the Chair.

Prof. A. W. BICKERTON gave the Society an account of his theory of the Origin of New Stars.

The following Paper was read :—

On Electro-thermal Phenomena at the Contact of Two Conductors with a Theory of a Class of Radio-Telegraph Detectors. By Dr. W. H. ECCLES.

The following Papers were taken as read :—

1. The Extraordinary Ray resulting from the Internal Reflection of an Extraordinary Ray at the Surface of an Uniaxial Crystal. By Mr. JAMES WALKER.
2. On the Evaluation of Certain Combinations of the Ber, Bei and Allied Functions. By Mr. S. BUTTERWORTH.

June 13th, 1913.

Meeting held at the Imperial College of Science.

Prof. C. H. LEES, F.R.S., Vice-President, in the Chair.

The following Papers were read :—

1. Some Experiments on Tinfoil Contact with Dielectrics. By G. E. BAIRSTO.

2. On a Method of Measuring the Pressure of Light by means of Thin Metal Foil. By Mr. G. D. WEST.

3. On the Quantum Theory of Energy and the Emission of Electricity from Hot Bodies. By Dr. W. WILSON.

June 27th, 1913.

An informal Meeting held at the National Physical Laboratory, where a number of demonstrations were given, and Fellows had an opportunity of inspecting the laboratories.

